



SEQUENCE LISTING

<110> MIYAWAKI, ATSUSHI
KARASAWA, SATOSHI

<120> CHROMOPROTEIN

<130> P26359

<140> 10/516,317

<141> 2004-12-10

<150> PCT/JP03/07336

<151> 2003-06-10

<150> JP 2002-168583

<151> 2002-06-10

<160> 22

<170> PatentIn version 3.3

<210> 1

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<212> PRT

<213> Cnidopus japonicus

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Lys	Pro	Tyr	Glu	Gly	Thr	Gln	Met	Glu	Asn	Ile	Lys	Val	Thr	Lys	Gly
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Gly	Pro	Leu	Pro	Phe	Ser	Phe	Asp	Ile	Leu	Thr	Pro	Asn	Cys	Gln	Tyr
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Gly	Ser	Val	Ala	Ile	Thr	Lys	Tyr	Thr	Ser	Gly	Ile	Pro	Asp	Tyr	Phe
65					70					75					80
Lys	Gln	Ser	Phe	Pro	Glu	Gly	Phe	Thr	Trp	Glu	Arg	Thr	Thr	Ile	Tyr
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Glu	Asp	Gly	Ala	Tyr	Leu	Thr	Thr	Gln	Gln	Glu	Thr	Lys	Leu	Asp	Gly
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Asn	Cys	Leu	Val	Tyr	Asn	Ile	Lys	Ile	Leu	Gly	Cys	Asn	Phe	Pro	Pro
		115					120					125			
Asn	Gly	Pro	Val	Met	Gln	Lys	Lys	Thr	Gln	Gly	Trp	Glu	Pro	Cys	Cys
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Gly	Thr	Val	Asn	Asn	His	His	Phe	Met	Cys	Glu	Ala	Glu	Gly	Glu	Gly		
			20					25					30				
aag	cca	tac	gag	gga	act	caa	atg	gag	aac	ata	aaa	gtc	acc	aaa	gga	144	
Lys	Pro	Tyr	Glu	Gly	Thr	Gln	Met	Glu	Asn	Ile	Lys	Val	Thr	Lys	Gly		
		35					40					45					
ggc	cct	ctg	ccg	ttc	tct	ttt	gat	atc	ttg	acg	cct	aac	tgc	caa	tat	192	
Gly	Pro	Leu	Pro	Phe	Ser	Phe	Asp	Ile	Leu	Thr	Pro	Asn	Cys	Gln	Tyr		
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gga	agc	gta	gcc	ata	acc	aag	tat	aca	tca	ggg	att	cca	gac	tac	ttt	240	
Gly	Ser	Val	Ala	Ile	Thr	Lys	Tyr	Thr	Ser	Gly	Ile	Pro	Asp	Tyr	Phe		
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aag	caa	tct	ttt	cct	gaa	gga	ttt	acc	tgg	gaa	aga	acc	aca	atc	tac	288	
Lys	Gln	Ser	Phe	Pro	Glu	Gly	Phe	Thr	Trp	Glu	Arg	Thr	Thr	Ile	Tyr		
				85					90					95			
gaa	gat	ggg	gct	tac	ctt	aca	act	caa	caa	gaa	acc	aaa	ctt	gat	gga	336	
Glu	Asp	Gly	Ala	Tyr	Leu	Thr	Thr	Gln	Gln	Glu	Thr	Lys	Leu	Asp	Gly		
			100					105					110				
aat	tgc	ctc	gtc	tac	aat	att	aaa	atc	ctt	gga	tgt	aat	ttt	ccc	ccc	384	
Asn	Cys	Leu	Val	Tyr	Asn	Ile	Lys	Ile	Leu	Gly	Cys	Asn	Phe	Pro	Pro		
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gag atg cgc tat aca cgt gat ggt gtg cta tgt ggc caa aca tta atg 480
Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
145 150 155 160

gca ctt aaa tgc gcc gat ggg aac cac ctc act tgc cat ctg aga act 528
Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
165 170 175

act tac agg tcc aaa aag gca gca aag gcg ttg cag atg cca ccc ttc 576
Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
180 185 190

cat ttt tca gac cat cgt cct gaa ata gtg aag gtt tca gag aac ggc 624
His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
195 200 205

aca cta ttt gaa cag cac gaa agt tca gtg gcc agg tac tgt caa aca 672
Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
210 215 220

tgc cca tct aaa ctt ggt cac aat taa 699
Cys Pro Ser Lys Leu Gly His Asn
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<212> PRT

<213> Cnidopus japonicus

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20 25 30

Lys Pro Tyr Glu Gly Thr Gln Met Glu Asn Ile Lys Val Thr Lys Gly
35 40 45

Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Leu
50 55 60

Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe
65 70 75 80

Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
85 90 95

Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
100 105 110

Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
115 120 125

Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Cys Cys
130 135 140

Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
145 150 155 160

Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
165 170 175

Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
180 185 190

His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
195 200 205

Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
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Cys Pro Ser Lys Leu Gly His Asn
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Gly Thr Val Asn Asn His His Phe Met Cys Glu Ala Glu Gly Glu Gly	
20 25 30	
aag cca tac gag gga act caa atg gag aac ata aaa gtc acc aaa gga	144
Lys Pro Tyr Glu Gly Thr Gln Met Glu Asn Ile Lys Val Thr Lys Gly	
35 40 45	
ggc cct ctg ccg ttc tct ttt gat atc ttg acg cct aac tgc caa ctt	192
Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Leu	
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gga agc gta gcc ata acc aag tat aca tca ggg att cca gac tac ttt	240
Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe	
65 70 75 80	
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Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr	
85 90 95	
gaa gat ggg gct tac ctt aca act caa caa gaa acc aaa ctt gat gga	336
Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly	
100 105 110	
aat tgc ctc gtc tac aat att aaa atc ctt gga tgt aat ttt ccc ccc	384
Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro	
115 120 125	
aat ggt cct gtg atg cag aag aaa acc caa ggc tgg gaa ccc tgt tgc	432
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Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met	
145 150 155 160	
gca ctt aaa tgc gcc gat ggg aac cac ctc act tgc cat ctg aga act	528
Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr	
165 170 175	

act tac agg tcc aaa aag gca gca aag gcg ttg cag atg cca ccc ttc 576
 Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190

cat ttt tca gac cat cgt cct gaa ata gtg aag gtt tca gag aac ggc 624
 His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
 195 200 205

aca cta ttt gaa cag cac gaa agt tca gtg gcc agg tac tgt caa aca 672
 Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
 210 215 220

tgc cca tct aaa ctt ggt cac aat taa 699
 Cys Pro Ser Lys Leu Gly His Asn
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<213> Cnidopus japonicus

<400> 13

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 20 25 30

Lys Pro Tyr Glu Gly Thr Gln Met Glu Asn Ile Lys Val Thr Lys Gly
 35 40 45

Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Met
 50 55 60

Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80

Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
 85 90 95

Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
 100 105 110

Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
 115 120 125

Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Cys Cys
 130 135 140

Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
 145 150 155 160

Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
 165 170 175

Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190

His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
 195 200 205

Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
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Cys Pro Ser Lys Leu Gly His Asn
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<212> DNA

<213> Cnidopus japonicus

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<222> (1)..(696)

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 Gly Thr Val Asn Asn His His Phe Met Cys Glu Ala Glu Gly Glu Gly
 20 25 30

aag cca tac gag gga act caa atg gag aac ata aaa gtc acc aaa gga 144
 Lys Pro Tyr Glu Gly Thr Gln Met Glu Asn Ile Lys Val Thr Lys Gly
 35 40 45

ggc cct ctg ccg ttc tct ttt gat atc ttg acg cct aac tgc caa atg 192
 Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Met
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gga agc gta gcc ata acc aag tat aca tca ggg att cca gac tac ttt 240
 Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80

aag caa tct ttt cct gaa gga ttt acc tgg gaa aga acc aca atc tac 288
 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
 85 90 95

gaa gat ggg gct tac ctt aca act caa caa gaa acc aaa ctt gat gga 336
 Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
 100 105 110

aat tgc ctc gtc tac aat att aaa atc ctt gga tgt aat ttt ccc ccc 384
 Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
 115 120 125

aat ggt cct gtg atg cag aag aaa acc caa ggc tgg gaa ccc tgt tgc 432
 Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Cys Cys
 130 135 140

gag atg cgc tat aca cgt gat ggt gtg cta tgt ggc caa aca tta atg 480
 Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
 145 150 155 160

 gca ctt aaa tgc gcc gat ggg aac cac ctc act tgc cat ctg aga act 528
 Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
 165 170 175

 act tac agg tcc aaa aag gca gca aag gcg ttg cag atg cca ccc ttc 576
 Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190

 cat ttt tca gac cat cgt cct gaa ata gtg aag gtt tca gag aac ggc 624
 His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
 195 200 205

 aca cta ttt gaa cag cac gaa agt tca gtg gcc agg tac tgt caa aca 672
 Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
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 tgc cca tct aaa ctt ggt cac aat taa 699
 Cys Pro Ser Lys Leu Gly His Asn
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 35 40 45

 Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Tyr
 50 55 60

 Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Gly
 65 70 75 80

 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
 85 90 95

 Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
 100 105 110

 Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
 115 120 125

 Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Cys Cys
 130 135 140

Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
 145 150 155 160
 Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
 165 170 175
 Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190
 His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
 195 200 205
 Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
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 Cys Pro Ser Lys Leu Gly His Asn
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 ggc aca gtc aac aat cat cac ttc atg tgc gaa gct gaa gga gag ggc 96
 Gly Thr Val Asn Asn His His Phe Met Cys Glu Ala Glu Gly Glu Gly
 20 25 30
 aag cca tac gag gga act caa atg ctt aac ata aaa gtc acc aaa gga 144
 Lys Pro Tyr Glu Gly Thr Gln Met Leu Asn Ile Lys Val Thr Lys Gly
 35 40 45
 ggc cct ctg ccg ttc tct ttt gat atc ttg acg cct aac tgc caa tat 192
 Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Tyr
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 gga agc gta gcc ata acc aag tat aca tca ggg att cca gac tac ggt 240
 Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Gly
 65 70 75 80
 aag caa tct ttt cct gaa gga ttt acc tgg gaa aga acc aca atc tac 288
 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
 85 90 95
 gaa gat ggg gct tac ctt aca act caa caa gaa acc aaa ctt gat gga 336
 Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
 100 105 110

aat tgc ctc gtc tac aat att aaa atc ctt gga tgt aat ttt ccc ccc 384
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 130 135 140
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 Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
 145 150 155 160
 gca ctt aaa tgc gcc gat ggg aac cac ctc act tgc cat ctg aga act 528
 Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
 165 170 175
 act tac agg tcc aaa aag gca gca aag gcg ttg cag atg cca ccc ttc 576
 Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190
 cat ttt tca gac cat cgt cct gaa ata gtg aag gtt tca gag aac ggc 624
 His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
 195 200 205
 aca cta ttt gaa cag cac gaa agt tca gtg gcc agg tac tgt caa aca 672
 Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
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 Cys Pro Ser Lys Leu Gly His Asn
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 20 25 30
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 35 40 45
 Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Phe
 50 55 60
 Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80
 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
 85 90 95

Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
 100 105 110
 Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
 115 120 125
 Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Cys Cys
 130 135 140
 Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
 145 150 155 160
 Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
 165 170 175
 Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190
 His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
 195 200 205
 Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
 210 215 220
 Cys Pro Ser Lys Leu Gly His Asn
 225 230

<210> 18
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 Met Ala Ser Lys Ile Ser Asp Asn Val Arg Ile Lys Leu Tyr Met Glu
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 ggc aca gtc aac aat cat cac ttc atg tgc gaa gct gaa gga gag ggc 96
 Gly Thr Val Asn Asn His His Phe Met Cys Glu Ala Glu Gly Glu Gly
 20 25 30
 aag cca tac gag gga act caa atg gag aac ata aaa gtc acc aaa gga 144
 Lys Pro Tyr Glu Gly Thr Gln Met Glu Asn Ile Lys Val Thr Lys Gly
 35 40 45
 ggc cct ctg ccg ttc tct ttt gat atc ttg acg cct aac tgc caa ttt 192
 Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Phe
 50 55 60
 gga agc gta gcc ata acc aag tat aca tca ggg att cca gac tac ttt 240
 Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80

aag caa tct ttt cct gaa gga ttt acc tgg gaa aga acc aca atc tac 288
Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
85 90 95
gaa gat ggg gct tac ctt aca act caa caa gaa acc aaa ctt gat gga 336
Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
100 105 110
aat tgc ctc gtc tac aat att aaa atc ctt gga tgt aat ttt ccc ccc 384
Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
115 120 125
aat ggt cct gtg atg cag aag aaa acc caa ggc tgg gaa ccc tgt tgc 432
Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Cys Cys
130 135 140
gag atg cgc tat aca cgt gat ggt gtg cta tgt ggc caa aca tta atg 480
Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
145 150 155 160
gca ctt aaa tgc gcc gat ggg aac cac ctc act tgc cat ctg aga act 528
Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
165 170 175
act tac agg tcc aaa aag gca gca aag gcg ttg cag atg cca ccc ttc 576
Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
180 185 190
cat ttt tca gac cat cgt cct gaa ata gtg aag gtt tca gag aac ggc 624
His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
195 200 205
aca cta ttt gaa cag cac gaa agt tca gtg gcc agg tac tgt caa aca 672
Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
210 215 220
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35 40 45

Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln His
50 55 60

Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80
 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
 85 90 95
 Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
 100 105 110
 Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
 115 120 125
 Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Cys Cys
 130 135 140
 Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
 145 150 155 160
 Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
 165 170 175
 Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190
 His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
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 ggc aca gtc aac aat cat cac ttc atg tgc gaa gct gaa gga gag ggc 96
 Gly Thr Val Asn Asn His His Phe Met Cys Glu Ala Glu Gly Glu Gly
 20 25 30
 aag cca tac gag gga act caa atg gag aac ata aaa gtc acc aaa gga 144
 Lys Pro Tyr Glu Gly Thr Gln Met Glu Asn Ile Lys Val Thr Lys Gly
 35 40 45

ggc cct ctg ccg ttc tct ttt gat atc ttg acg cct aac tgc caa cat 192
 Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln His
 50 55 60

gga agc gta gcc ata acc aag tat aca tca ggg att cca gac tac ttt 240
 Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80

aag caa tct ttt cct gaa gga ttt acc tgg gaa aga acc aca atc tac 288
 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
 85 90 95

gaa gat ggg gct tac ctt aca act caa caa gaa acc aaa ctt gat gga 336
 Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
 100 105 110

aat tgc ctc gtc tac aat att aaa atc ctt gga tgt aat ttt ccc ccc 384
 Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
 115 120 125

aat ggt cct gtg atg cag aag aaa acc caa ggc tgg gaa ccc tgt tgc 432
 Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Cys Cys
 130 135 140

gag atg cgc tat aca cgt gat ggt gtg cta tgt ggc caa aca tta atg 480
 Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
 145 150 155 160

gca ctt aaa tgc gcc gat ggg aac cac ctc act tgc cat ctg aga act 528
 Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
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act tac agg tcc aaa aag gca gca aag gcg ttg cag atg cca ccc ttc 576
 Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190

cat ttt tca gac cat cgt cct gaa ata gtg aag gtt tca gag aac ggc 624
 His Phe Ser Asp His Arg Pro Glu Ile Val Lys Val Ser Glu Asn Gly
 195 200 205

aca cta ttt gaa cag cac gaa agt tca gtg gcc agg tac tgt caa aca 672
 Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
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tgc cca tct aaa ctt ggt cac aat taa 699
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 Lys Pro Tyr Glu Gly Thr Gln Met Glu Asn Ile Lys Val Thr Lys Gly
 35 40 45
 Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Tyr
 50 55 60
 Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80
 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr
 85 90 95
 Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly
 100 105 110
 Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro
 115 120 125
 Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Ser Cys
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 Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met
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 Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr
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 Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe
 180 185 190
 His Phe Ser Asp His Arg Leu Glu Ile Val Lys Val Ser Glu Asn Gly
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 Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr
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Gly Thr Val Asn Asn His His Phe Met Val Glu Ala Glu Gly Glu Gly	
20 25 30	
aag cca tac gag gga act caa atg gag aac ata aaa gtc acc aaa gga	144
Lys Pro Tyr Glu Gly Thr Gln Met Glu Asn Ile Lys Val Thr Lys Gly	
35 40 45	
ggc cct ctg ccg ttc tct ttt gat atc ttg acg cct aac tgc caa tat	192
Gly Pro Leu Pro Phe Ser Phe Asp Ile Leu Thr Pro Asn Cys Gln Tyr	
50 55 60	
gga agc gta gcc ata acc aag tat aca tca ggg att cca gac tac ttt	240
Gly Ser Val Ala Ile Thr Lys Tyr Thr Ser Gly Ile Pro Asp Tyr Phe	
65 70 75 80	
aag caa tct ttt cct gaa gga ttt acc tgg gaa aga acc aca atc tac	288
Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Ile Tyr	
85 90 95	
gaa gat ggg gct tac ctt aca act caa caa gaa acc aaa ctt gat gga	336
Glu Asp Gly Ala Tyr Leu Thr Thr Gln Gln Glu Thr Lys Leu Asp Gly	
100 105 110	
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Asn Cys Leu Val Tyr Asn Ile Lys Ile Leu Gly Cys Asn Phe Pro Pro	
115 120 125	
aat ggt cct gtg atg cag aag aaa acc caa ggc tgg gaa ccc agt tgc	432
Asn Gly Pro Val Met Gln Lys Lys Thr Gln Gly Trp Glu Pro Ser Cys	
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Glu Met Arg Tyr Thr Arg Asp Gly Val Leu Cys Gly Gln Thr Leu Met	
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Ala Leu Lys Cys Ala Asp Gly Asn His Leu Thr Cys His Leu Arg Thr	
165 170 175	
act tac agg tcc aaa aag gca gca aag gcg ttg cag atg cca ccc ttc	576
Thr Tyr Arg Ser Lys Lys Ala Ala Lys Ala Leu Gln Met Pro Pro Phe	
180 185 190	
cat ttt tca gac cat cgt ctt gaa ata gtg aag gtt tca gag aac ggc	624
His Phe Ser Asp His Arg Leu Glu Ile Val Lys Val Ser Glu Asn Gly	
195 200 205	
aca cta ttt gaa cag cac gaa agt tca gtg gcc agg tac tgt caa aca	672
Thr Leu Phe Glu Gln His Glu Ser Ser Val Ala Arg Tyr Cys Gln Thr	
210 215 220	
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Cys Pro Ser Lys Leu Gly His Asn	
225 230	